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31 August 2006

**(54) Title: HEAT SHOCK PROTEIN BINDING FRAGMENTS OF CD91, AND USES THEREOF**

**(57) Abstract:** The present invention relates to compositions and methods for the use of natural and recombinant p95 forms and fragments as heat shock protein binding proteins. The invention is based, in part, on the Applicant's discovery that a p95 can be recombinantly expressed. The present invention also relates to CD91 polypeptide fragments that comprise at least p95 and additional contiguous sequence from domain II, III, and IV of CD91. The present invention provides nucleic acid molecules encoding a CD91 polypeptide fragment or an analog, derivative or mimetic thereof, CD91 polypeptide fragments, or analogs, derivatives or mimetics thereof, vectors comprising a nucleic acid molecule encoding a CD91 polypeptide fragment, expression vectors comprising a nucleic acid molecule encoding a CD91 polypeptide fragment, eukaryotic and prokaryotic cells recombinantly expressing a CD91 polypeptide fragment, methods of identifying compounds that interact with a CD91 polypeptide fragment or the interaction of a CD91 polypeptide fragment and CD91 ligands, methods for modulating an immune response with the compositions and methods of the invention, and methods for treatment using the compositions and methods disclosed herein.

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/32167

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC: C07H 21/02( 2006.01),21/04( 2006.01)

USPC: 536/23.1

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 536/23.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
SEQ ID NO: 1, 2, 3 in GenEmbl, Geneseq, EST, Issued Patents, Published Applications

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HERZ, J., et al. Surface location and high affinity for calcium of a 500-kd liver membrane protein closely related to the LDL-receptor suggest a physiological role as lipoprotein receptor. EMBO J. 1988. Vol. 7, No. 13, pages 4119-4127, entire document.	1-17
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Y	VOET et al. "Biochemistry" (New York, John Wiley & Sons), 1990, pages 844-845, entire document.	18

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	
"A"	document defining the general state of the art which is not considered to be of particular relevance
"B"	earlier application or patent published on or after the international filing date
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O"	document referring to an oral disclosure, use, exhibition or other means
"P"	document published prior to the international filing date but later than the priority date claimed
"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&"	document member of the same patent family

Date of the actual completion of the international search

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**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US03/32167

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:  
Please See Continuation Sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-18

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US03/32167

**BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING**

This application contains the following Inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all Inventions to be examined, the appropriate additional examination fees must be paid.

- I. Claims 1-18, drawn to a nucleic acid and a polypeptide and method of making and using first product.
- II. Claims 19-21, 23, drawn to an antibody or fragment thereof that immunospecifically binds to CD91.
- III. Claim 22, drawn to an anti-idiotype antibody which binds to the antibody or fragments that bind to CD91.
- IV. Claim 24-25, drawn to a method for treating a CD91-related disease or disorder.
- V. Claim 26-36, drawn to a method for identifying a compound that modulates an HSP-CD91-mediated process.

The inventions listed as Groups I-V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group I is drawn to a nucleic acid comprising a nucleic acid, SEQ ID NO: 1, encoding a polypeptide SEQ ID NO: 2, which is anticipated by Herz et al., 1988. Since the invention of Group I does not contribute over the art, there is no special technical feature in the invention of Group I.